

WHAT IS CLAIMED IS:

- 5 *Sub A1*
1. An echo canceler, comprising:
at least one adaptive filter for extracting at least one echo signal from speech signals and
for calculating at least one power value of the speech signals;
at least one subtraction means for generating at least one error signal by subtracting the at
least one echo signal from the speech signals; and
at least one update control means for updating at least one filter coefficient of the at least
one adaptive filter in response to the at least one power value and the at least one error signal.
 - 10 2. The echo canceler of claim 1, wherein the update control means updates the filter
coefficient when the power value is larger than a threshold value of the adaptive filter.
 - 15 3. The echo canceler of claim 2, wherein the update control means comprises:
a comparator for comparing the power value and the threshold value; and
a logic circuit for receiving an output signal of the comparator and the error signal from
the subtraction means, and for generating a update signal to update the filter coefficient when the
output signal and the error signal are activated.
 - 20 4. The echo canceler of claim 1, further including an echo path for making echo
components emerged from the speech signals which is provided to the at least one subtraction
means.

5. The echo canceler of claim 2, wherein the update control means stops updating the filter coefficient when the power value is smaller than the threshold value.

6. An echo canceler, comprising:

5 a plurality of adaptive filters arranged in cascade, wherein each adaptive filter receiving speech signals extracts an echo signal and generates a power value of the speech signals;

an echo path for making echo components emerged from the speech signals;

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a plurality of subtraction means each for generating an error signal by subtracting the echo signal of the adaptive filter from the speech signals of the echo path; and

10 a plurality of update control means each for updating a filter coefficient of the adaptive filter in response to the power value from the adaptive filter and the error signal from the subtraction means.

7. An echo canceler, comprising:

15 at least one adaptive filter for extracting at least one echo signal from speech signals and for calculating at least one power value of the speech signals;

a selective means for generating at least one selective signal in response to the at least one power value of the speech signals;

20 at least one subtraction means for generating at least one error signal by subtracting the at least one echo signal from the speech signals; and

at least one update control means for updating at least one filter coefficient of the at least one adaptive filter when the at least one selective signal provided from the selective means is activated.

8. The echo canceler of claim 7, further including an echo path for making echo components emerged from the speech signals which is provided to the at least one subtraction means.

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9. The echo canceler of claim 7, wherein the update control means includes a logic circuit for receiving the error signal from the subtraction means and the selective signal from the selective means, and for generating a update signal to update the filter coefficient when the error signal and the selective signal are activated.

10. The echo canceler of claim 7, wherein the selective means generates the at least one selective signal in response to a performing speed of the at least one adaptive filter.

11. The echo canceler of claim 10, wherein the at least one selective signal enables the at least one update control means for updating the at least one filter coefficient.

12. A method for removing echo components from speech signals in a vocoder, comprising the steps of:

receiving the speech signals at a plurality of adaptive filters arranged in cascade and generating a plurality of echo signals extracted from the speech signals and a plurality of power values of the speech signals, respectively;

generating a plurality of selective signals in response to the plurality of power values of the speech signals, respectively;

generating a plurality of error signals by subtracting a plurality of echo signals from the speech signals provided from an echo path; and

updating the plurality of filter coefficients of the plurality of adaptive filters, respectively, in response to the plurality of selective signals.

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13. The method of claim 12, wherein the step of updating the filter coefficients occurs when the selective signals are activated.

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